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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,324	03/22/2004	Hiroki Kitamura	00862.023507	9095
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EXAMINER				
STOREY, WILLIAM C				
ART UNIT		PAPER NUMBER		
4115				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/805,324

**Applicant(s)**

KITAMURA ET AL.

**Examiner**

WILLIAM C. STOREY

**Art Unit**

4115

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
- Paper No(s)/Mail Date 7/6/2004.
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. The disclosure is objected to because of the following informalities: On page 14, line 14, "for read" should be "for reading." On page 15, on line 9, "in read" should be "in reading."

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 4, and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemura et al. (US 6341843), hereinafter referred to as Takemura, in view of Kato et al. (US 6009845), hereinafter referred to as Kato.

Regarding claim 1, Takemura discloses A printing apparatus which performs printing by scanning a carriage that supports a printhead having a plurality of printing elements arrayed in a predetermined direction (figure 4, column 13, line 22), on a printing medium in a direction perpendicular to the predetermined direction (column 9, lines 44-45), comprising: a buffer memory which has a storage area corresponding to each printing element and stores printing data stored in said printing data memory (column 16, 55-57); a head parameter unit which stores information on an arrangement of the printhead (column 37, lines 60-61, column 38, lines 63-67, column 41, lines 7-13); and a buffer controller which controls, in accordance with the information stored in said

head parameter unit, processing of reading out the printing data stored in said printing data memory and storing the printing data in said buffer memory, and processing of reading out the printing data stored in said buffer memory (column 53, lines 35-38, column 16, lines 55-57, 62-64, column 54, lines 18-19, 57-58, column 55, lines 5-9. Takemura discloses that print head configuration determines buffer read out and placement. Since Takemura also disclosed read out and placement from the print data store to the buffer based on the storage locations dictated in the print buffer, and that the head configuration dictated gaps in the buffer, then this would read on claimed in accordance with the information stored in said head parameter unit, processing of reading out the printing data stored in said printing data memory and storing the printing data in said buffer memory.)

Takemura did not specifically disclose a printing data memory which stores printing data of a raster format. However, the examiner maintains that it was well known in the art to provide a printing data memory which stores printing data of a raster format, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses a printing data memory which stores printing data of a raster format (column 8, lines 10-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing a printing data memory which stores printing data of a raster format, as taught by Kato, for the purpose of providing the data in the print data store in a well known format.

Regarding claim 3, Takemura and Kato disclose everything as applied above for claim 1. Takemura did not specifically disclose the buffer controller converting the raster data into column data in reading out the printing data stored in said buffer memory. However, the examiner maintains that it was well known in the art to provide the buffer controller converting the raster data into column data in reading out the printing data stored in said buffer memory, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses the buffer controller converting the raster data into column data in reading out the printing data stored in said buffer memory (figure 3, column 8, lines 26-35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing the buffer controller converting the raster data into column data in reading out the printing data stored in said buffer memory, as taught by Kato, for the purpose of providing aligning the data in a more vertical arrangement to match the alignment of nozzles in a near-vertical arrangement.

Regarding claim 4, Takemura and Kato disclose everything as applied above for claim 1. Takemura did not specifically disclose reading out the printing data stored in said buffer from each address. However, the examiner maintains that it was well known in the art to provide reading out the printing data stored in said buffer from each address, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses the buffer controller reading out the printing data stored in said buffer from each address (column 8, lines 28-35, column 9, lines 13-16).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing reading out the printing data stored in said buffer from each address, as taught by Kato, for the purpose of providing matched access to print data.

Regarding claim 6, Takemura and Kato disclose everything as applied above for claim 4. However, Takemura fails to disclose wherein said buffer controller includes a register which holds, by a plurality of addresses, data of predetermined bits read out by accessing each address of said buffer memory. However, the examiner maintains that it was well known in the art to provide wherein said buffer controller includes a register which holds, by a plurality of addresses, data of predetermined bits read out by accessing each address of said buffer memory, as taught by Kato.

In addition, Kato discloses at the print timing, a set of data comprising of a plurality of bytes, which comprises bits, for C, M, Y, and K color nozzles, which are used for sequential addresses, are read from the image buffer, and at the same time, are transferred to the head data register, which reads on claimed wherein said buffer controller includes a register which holds, by a plurality of addresses, data of predetermined bits read out by accessing each address of said buffer memory, as disclosed at column 13, lines 1-8. It is inherent that some buffer control must be

exerted in order to control the buffer to do anything, thereby reading of claimed buffer controller.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing wherein said buffer controller includes a register which holds, by a plurality of addresses, data of predetermined bits read out by accessing each address of said buffer memory, as taught by Kato, for the purpose of synchronously transmitting data at specific timing.

Regarding claim 7, Takemura discloses A printing apparatus which performs printing by scanning a printhead having a plurality of printing elements arrayed in a predetermined direction (figure 4, column 13, line 22), on a printing medium in a direction perpendicular to the predetermined direction (column 9, lines 44-45), comprising: a plurality of buffer memories (column 16, 52-57 Takemura discloses having separate buffer memory sections for different printheads. Separation has already been taught; having two separate buffer memories does not make the claim patentably distinct from the teachings of Takemara.); a head parameter unit which holds information on the printhead (column 37, lines 60-61, column 38, lines 63-67, column 41, lines 7-13); acquisition means for acquiring address information subjected to read in said printing data memory on the basis of the information on the printhead in storing the printing data read out from said printing data memory in said buffer memory; and a buffer controller which stores the printing data read out from said printing data memory in said buffer memory, on the basis of the address information of said printing data memory that is acquired by said acquisition means (column 53, lines 35-38, column 16,

lines 55-57, 62-64, column 54, lines 18-19, 57-58, column 55, lines 5-9, column 22, lines 14-17. Takemura discloses that print head configuration determines buffer read out and placement. Since Takemura also disclosed read out and placement from the print data store to the buffer based on the storage locations dictated in the print buffer, and that the head configuration dictated gaps in the buffer, then this would read on claimed above.).

The examiner maintains that it was well known in the art to provide a printing data memory which stores printing data of a raster format and the buffer memory storing raster data of predetermined bits in correspondence with the respective printing elements and transfer means for transferring the data read out from said buffer memory to the printhead, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses a printing data memory which stores printing data of a raster format and the buffer memory storing raster data of predetermined bits in correspondence with the respective printing elements (column 8, lines 10-13, column 7, lines 44-49); and transfer means for transferring the data read out from said buffer memory to the printhead (column 9, lines 20-23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing a printing data memory which stores printing data of a raster format and the buffer memory storing raster data of predetermined bits in correspondence with the respective printing elements and transfer means for transferring the data read out from said buffer memory



to the printhead, as taught by Kato, for the purpose of providing the data in the print data store and buffer in a well known format and transferring data to the printhead from the buffer memory.

Regarding claim 8, changing an apparatus to a method does not make a claim patentably distinct. Takemura discloses a printing data control method in a printing apparatus which performs printing by scanning a carriage that supports a printhead having a plurality of printing elements arrayed in a predetermined direction (figure 4, column 13, line 22), on a printing medium in a direction perpendicular to the predetermined direction (column 9, lines 44-45), comprising: a buffer step of storing printing data stored in the printing data memory, in a buffer memory having a storage area corresponding to each printing element (column 16, 55-57); a parameter storage step of storing information on an arrangement of the printhead in a head parameter unit (column 37, lines 60-61, column 38, lines 63-67, column 41, lines 7-13. It is inherent that there must have been a parameter storage step in order to place the information on the printhead as it is currently taught.); and a buffer control step of controlling, in accordance with the information stored in the head parameter unit, processing of reading out the printing data stored in the printing data memory and storing the printing data in the buffer memory, and processing of reading out the printing data stored in the buffer memory (column 53, lines 35-38, column 16, lines 55-57, 62-64, column 54, lines 18-19, 57-58, column 55, lines 5-9. Takemura discloses that print head configuration determines buffer read out and placement. Since Takemura also disclosed read out and placement from the print data store to the buffer based on the storage locations

dictated in the print buffer, and that the head configuration dictated gaps in the buffer, then this would read on what is claimed above.)

Takemura did not specifically disclose a printing data storage step of storing printing data of a raster format in a printing data memory. However, the examiner maintains that it was well known in the art to provide a printing data storage step of storing printing data of a raster format in a printing data memory, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses a printing data storage step of storing printing data of a raster format in a printing data memory (column 8, lines 10-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing a printing data storage step of storing printing data of a raster format in a printing data memory, as taught by Kato, for the purpose of providing the data in the print data store in a well known format.

Regarding claim 9, changing an apparatus to a method does not make a claim patentably distinct. Takemura discloses a printing data control method in a printing apparatus which performs printing by scanning a printhead having a plurality of printing elements arrayed in a predetermined direction (figure 4, column 13, line 22), on a printing medium in a direction perpendicular to the predetermined direction (column 9, lines 44-45), comprising: a buffer step of storing data in a plurality of buffer memories (column 16, 52-57 Takemara discloses having separate buffer memory sections for

different printheads. Separation has already been taught; having two separate buffer memories does not make the claim patentably distinct from the teachings of Takemura.); a parameter storage step of holding information on the printhead by a head parameter (column 37, lines 60-61, column 38, lines 63-67, column 41, lines 7-13. Because the print head holds information on it, there must then inherently be a parameter storage step.); an acquisition step of acquiring address information subjected to read in the printing data memory on the basis of the information on the printhead in storing the printing data read out from the printing data memory in the buffer memory; a buffer control step of storing the printing data read out from the printing data memory in the buffer memory, on the basis of the address information of the printing data memory that is acquired in the acquisition step (column 53, lines 35-38, column 16, lines 55-57, 62-64, column 54, lines 18-19, 57-58, column 55, lines 5-9, column 22, lines 14-17. Takemura discloses that print head configuration determines buffer read out and placement. Since Takemura also disclosed read out and placement from the print data store to the buffer based on the storage locations dictated in the print buffer, and that the head configuration dictated gaps in the buffer, then this would read on what is claimed above.).

The examiner maintains that it was well known in the art to provide a printing data storage step of storing printing data of a raster format in a printing data memory; a buffer step of storing raster data of predetermined bits in a plurality of buffer memories in correspondence with the respective printing elements and a transfer step of

transferring the data read out from the buffer memory to the printhead, as taught by Kato.

In a similar field of endeavor, Kato discloses a serial printer, and image buffer access method for serial printer. In addition, Kato discloses a printing data storage step of storing printing data of a raster format in a printing data memory; a buffer step of storing raster data of predetermined bits in a plurality of buffer memories in correspondence with the respective printing elements (column 8, lines 10-13, column 7, lines 44-49); and a transfer step of transferring the data read out from the buffer memory to the printhead (column 9, lines 20-23).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura by specifically providing a printing data storage step of storing printing data of a raster format in a printing data memory; a buffer step of storing raster data of predetermined bits in a plurality of buffer memories in correspondence with the respective printing elements and a transfer step of transferring the data read out from the buffer memory to the printhead, as taught by Kato, for the purpose of providing the data in the print data store and buffer in a well known format and transferring data to the printhead from the buffer memory.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takemura inv view of Kato and further in view of Barbour et al. (US 6705694), hereinafter referred to as Barbour.

Regarding claim 2, Takemura and Kato disclose everything as applied above for claim 1. In addition, Takemura discloses wherein the information stored in said head

parameter unit includes at least the number of nozzle arrays of the printhead, the number of nozzles which constitute the nozzle arrays, and nozzles to be driven in the nozzle arrays. Takemura discloses the printer having pre-loaded information for many different types of print heads (column 48, lines 65-66). In addition, Takemura discloses above reading a print head ID in order to determine characteristics about the print head. Takemura also discloses being able to receive new parameters such as driving information and buffer read out parameters (column 49, lines 46-50). In order to set up the print buffer to compensate for the elements of nozzle arrays as disclosed in this embodiment, it is inherent that the number of nozzle arrays, number of nozzles on those arrays, and the actual nozzles used for printing (which reads on claimed nozzles to be driven in the nozzle arrays) be a known value (disclosed above and column 55, lines 25-32). However, Takemura and Kato does not distinctly disclose the information actually being stored on the print head. However, the examiner maintains that it was well known in the art to provide the information actually being stored on the print head, as taught by secondary reference.

In a similar field of endeavor, Barbour discloses a high performance printing system and protocol. In addition, Barbour discloses a print head with a memory device that may store various printhead specific data (column 1, lines 48, 50-54).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura and Kato by specifically providing the information actually being stored on the print head, as taught by Barbour, for the purpose of storing the information in one place rather than another.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takemura in view of Kato in view of Oda (US 5838888).

Regarding claim 5, Takemura and Kato disclose everything as applied above for claim 4. Takemura discloses printing at different resolutions, and correspondingly the nozzles printing with a different driving sequence. For example, Takemura discloses driving every 2 nozzles in sequence, which reads on claimed wherein the printhead performs distributed driving for a predetermined number of nozzles, as disclosed at column 56, lines 59-61. Takemura discloses that the buffer readout sequence is change in correspondence with the change in nozzle firing sequence, which reads on claimed in accordance with a distributed driving number in reading out the print data stored in buffer memory; as disclosed at column 82, lines 15-18, column 83, lines 25-34 and figure 47. The examiner maintains that it was well known in the art to provide calculating a read address in accordance with timing, as taught by Oda.

In a similar field of endeavor, Oda discloses an image recorder. In addition, Oda discloses the print data for each data corresponding to each nozzle being timed to a clock for transfer, as disclosed at column 3, lines 65-67 and column 4, lines 1-8. Oda discloses an address generator that aids the buffer control in reading out the necessary data at specific timings, which together with the above would then read on claimed buffer controller calculates a read address in accordance with a distributed driving number in reading out the printing data stored in said buffer memory; as disclosed at column 4, lines 40-52.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Takemura and Kato by specifically providing calculating a read address in accordance with timing, as taught by Oda, for the purpose of accessing the print buffer data respective to timed nozzle firings.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Usui et al. (US 6695425) discloses a control device and control method for print head mechanism, and printer incorporating the same. Nakata (US 7092115) discloses a data processing method, data processing apparatus and image printing apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM C. STOREY whose telephone number is (571)270-3576. The examiner can normally be reached on Monday - Friday (Alternate Fridays off) 7:30-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jefferey F. Harold can be reached on 571-272-7519. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William C Storey/  
Examiner, Art Unit 4115

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